SANTA CRUZ BIOTECHNOLOGY, INC.

SIRT7 siRNA (h): sc-63030

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The Power to Question

BACKGROUND

Sirtuins (SIRT1-7) are human homologs of the yeast Sir2 (silent information regulator-2) protein and are divided into four main classes: SIRT1-3 are class I, SIRT4 is class II, SIRT5 is class III and SIRT6-7 are class IV. In *S. cerevisiae,* Sir2 deacetylates histones in an NAD-dependent manner, which regulates silencing at the telomeric, rDNA (ribosomal DNA) and silent mating-type loci. The human SIRT proteins are NAD-dependent deacetylases that act as intracellular regulators and are thought to have ribosyltransferase activity. SIRT7 (NAD-dependent deacetylase sirtuin-7), also known as SIR2L7, is a member of the class IV sirtuin family and is localized to the nucleolus. Expressed throughout the body, SIRT7 associates with rDNA genes where it interacts with histones and acts as a positive regulator of RNA polymerase I (Pol I). SIRT7 is a probable NAD-dependent deacetylase whose expression is upregulated in thyroid carcinoma cells. Overexpression of SIRT7 increases Pol I-mediated transcription, thereby speeding cell growth and contributing to the development of cancer. Two isoforms exist due to alternative splicing events.

REFERENCES

1. Frye, R.A. 2000. Phylogenetic classification of prokaryotic and eukaryotic Sir2-like proteins. Biochem. Biophys. Res. Commun. 273: 793-798.
2. Frye, R. 2002. "SIRT8" expressed in thyroid cancer is actually SIRT7. Br. J. Cancer 87: 1479-1479.

CHROMOSOMAL LOCATION

Genetic locus: SIRT7 (human) mapping to 17q25.3.

PRODUCT

SIRT7 siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see SIRT7 shRNA Plasmid (h): sc-63030-SH and SIRT7 shRNA (h) Lentiviral Particles: sc-63030-V as alternate gene silencing products.

For independent verification of SIRT7 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-63030A, sc-63030B and sc-63030C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

SIRT7 siRNA (h) is recommended for the inhibition of SIRT7 expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

SIRT7 (C-3): sc-365344 is recommended as a control antibody for monitoring of SIRT7 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor SIRT7 gene expression knockdown using RT-PCR Primer: SIRT7 (h)-PR: sc-63030-PR (20 µl, 539 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Yu, H., et al. 2014. Overexpression of sirt7 exhibits oncogenic property and serves as a prognostic factor in colorectal cancer. Clin. Cancer Res. 20: 3434-3445.
2. Wang, X., et al. 2017. MicroRNA-20b contributes to high glucose-induced podocyte apoptosis by targeting SIRT7. Mol. Med. Rep. 16: 5667-5674.
3. Wyman, A.E., et al. 2017. Sirtuin 7 is decreased in pulmonary fibrosis and regulates the fibrotic phenotype of lung fibroblasts. Am. J. Physiol. Lung Cell. Mol. Physiol. 312: L945-L958.
4. Zhou, X., et al. 2018. MicroRNA-519d inhibits proliferation and induces apoptosis of human hypertrophic scar fibroblasts through targeting sirtuin 7. Biomed. Pharmacother. 100: 184-190.
5. Choudhury, M., et al. 2020. SIRT7-mediated modulation of glutaminase 1 regulates TGF-β-induced pulmonary fibrosis. FASEB J. 34: 8920-8940.
6. Li, D.J., et al. 2021. NAD^+-boosting therapy alleviates nonalcoholic fatty liver disease via stimulating a novel exerkine Fndc5/irisin. Theranostics 11: 4381-4402.
7. Wang, Y., et al. 2022. SIRT4-catalyzed deacetylation of Axin1 modulates the Wnt/β-catenin signaling pathway. Front. Oncol. 12: 872444.
8. Rodríguez, S., et al. 2022. Transcriptional regulation of CDKN2A/p16 by sirtuin 7 in senescence. Mol. Med. Rep. 26: 345.

RESEARCH USE

For research use only, not for use in diagnostic procedures.